

Engine, removing and installing

Special tools and equipment

- ◆ VAG 1921 Spring-clip Pliers
 - ◆ VAG 1306 Drip tray
 - ◆ 3277A Installation tool
 - ◆ 3408 Engine support
 - ◆ VAG 1383 A Engine/transmission jack
 - ◆ G 000 100 Grease (for vehicles with manual transmission)
 - ◆ VAG 1331 Torque wrench (5 to 50 Nm)
 - ◆ VAG 1332 Torque wrench (40 to 200 Nm)
 - ◆ Cable tie
- Remove engine/transmission assembly from

below.

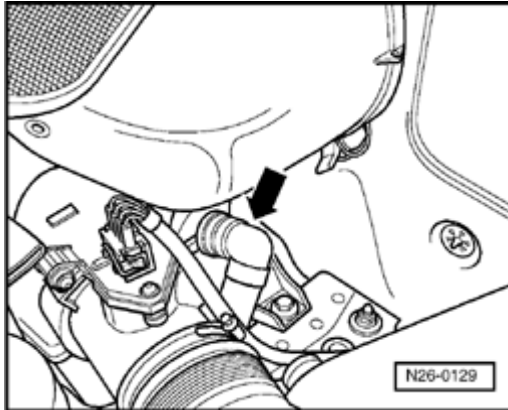
CAUTION!

***Obtain radio code before disconnecting
battery ground strap.***

- Disconnect battery ground cable.
 - ◆ Ignition must be switched OFF
- Always replace cable ties in original position.



- Drain coolant ⇒ [Page 19-14](#) .
- Remove radiator and radiator cooling fan ⇒ [Page 19-22](#) .
- Remove ribbed belt ⇒ [Page 13-22](#) .



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- Detach hose from combi-valve at Air Cleaner upper section -arrow-.
- Remove intake manifold complete with intake manifold lower section and Throttle Valve Control Module ⇒ [Page 15-9](#) .
- Disconnect power steering lines from right engine support.
- Remove power steering pump with bracket and secure to body with wire (hoses remain connected).

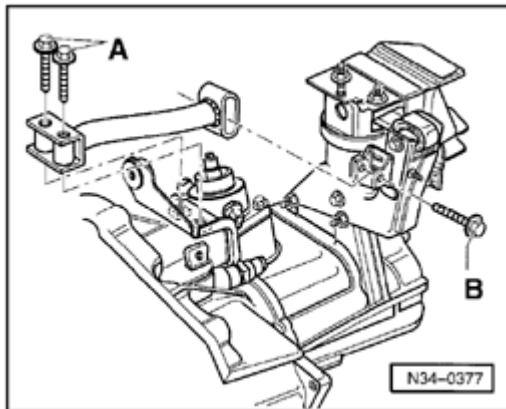
⇒ [Repair Manual, Suspension, Wheels, Brakes, Steering m.y. 1992-1996, Repair Group 40](#) ⇒ [Repair Manual, Suspension, Wheels, Steering from m.y. 1997, Repair Group 40](#)

- Remove front exhaust pipe ⇒ [Page 26-2](#) .
- Disconnect wiring from transmission, generator and starter and move out of the way.
- Disconnect all engine coolant, vacuum and breather hoses.



Vehicles with manual transmission:

- Pry off line/hose from slave cylinder on transmission.



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- Remove transverse support bolts -A- and -B-.
- Remove transverse support.
- Remove gearshift mechanism from transmission.

Vehicles with automatic transmission:

- Remove transmission shift cable.

⇒ [Repair Manual, 4 Spd. Automatic Transmission 01P, Repair Group 37](#)

Vehicles with A/C:

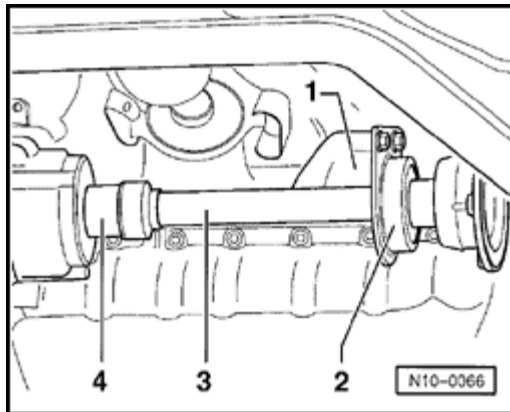
- Observe additional information and removal instructions ⇒ [Page 10-14](#).

All vehicles:

- Remove axle shafts.

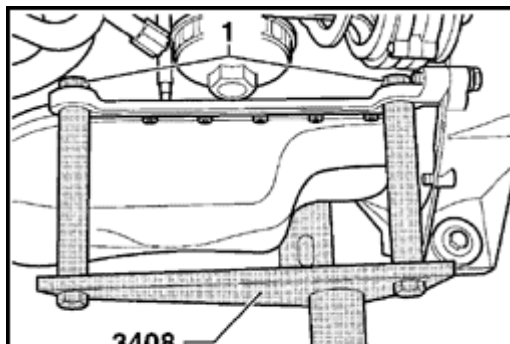
⇒ [Repair Manual, Suspension, Wheels, Brakes, Steering m.y. 1992-1996, Repair Group 40](#)

⇒ [Repair Manual, Suspension, Wheels, Steering from m.y. 1997, Repair Group 40](#)



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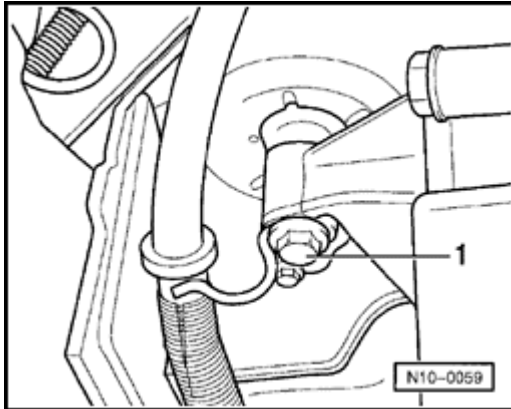
- Remove support bracket -1- from cylinder block and pull flange shaft -3- out of transmission shaft -4-.
- Remove flange shaft -3- with flange shaft bearing -2-.
- Place 3408 engine support on VAG 1383 A engine/transmission jack.



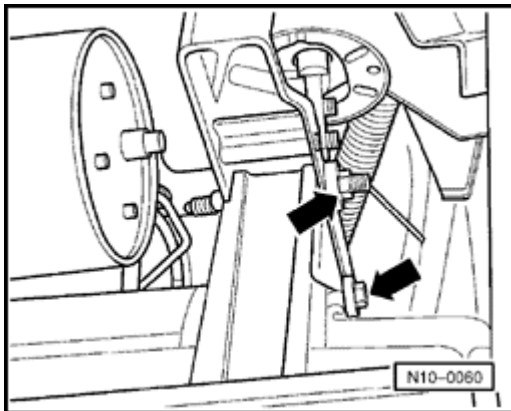
A

- Place 3408 engine support on cylinder block and tighten nuts -1-.
 - ◆ 40 Nm (30 ft lb)
- Remove pendulum support.

⇒ [Repair Manual, Suspension, Wheels, Brakes, Steering m.y. 1992-1996, Repair Group 40](#) ⇒ [Repair Manual, Suspension, Wheels, Steering from m.y. 1997, Repair Group 40](#)



- A
- Remove right assembly mount bolt -1-.



- A
- Remove left assembly mount bolts -arrows-.
 - Carefully lower assembly.

CAUTION!

Carefully guide assembly out of vehicle while lowering. Do not allow assembly to contact or damage body.



Engine, mounting on engine stand

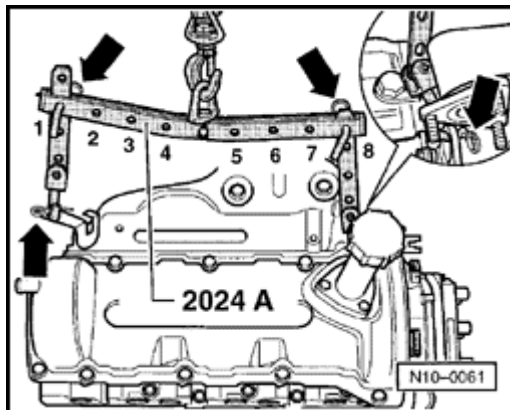
- Mount engine to VW 313 engine stand support clamp using 3269 engine bracket.

Special tools and equipment

- ◆ VAG 1202 A Workshop crane
- ◆ 2024 A Lifting tackle
- ◆ 3269 Engine bracket
- ◆ VW 313 Support clamp

Vehicles with manual transmission

- Attach 2024 A as follows:
- Lift off of VAG 1383 A engine/transmission jack with workshop crane.
 - ◆ Vibration damper end: 3rd hole in hook at position 1.
 - ◆ Flywheel end: 4th hole in hook at position 8.





CAUTION!

Hooks and locating pins must be secured with locking pins.

Note:

- ◆ *Positions marked 1 to 4 on bar must face toward vibration damper.*
- ◆ *Holes in hooks are counted up from the hook.*
- ◆ *If engine must be separated from transmission, first separate torque converter from drive plate (3 bolts). Secure torque converter so it cannot fall out.*
- Remove 3408 engine bracket from cylinder block.
- Install 3269 engine bracket on cylinder block and tighten bolts.
 - ◆ 40 Nm (30 ft lb)
- Install engine in VW 313 support clamp using VAG 1202 A workshop crane.

Engine, installing

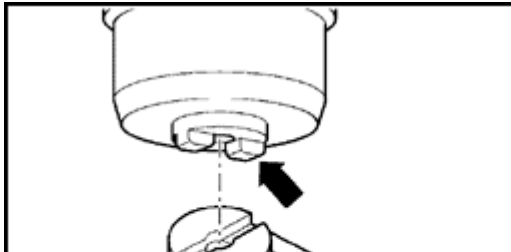
Install engine in reverse sequence, note the following:

Vehicles with manual transmission

- Check clutch release bearing in slave cylinder for wear. If necessary replace slave cylinder with release bearing.
- Clean splines of input shaft and lightly grease with G 000 100.

All vehicles

- Check if engine/transmission locating dowels are installed in cylinder block. Install if necessary.
- Install mounting hardware approx. 5 to 6 turns by hand.
- When installing right side engine mount, make sure hydro mount lugs engage in engine bracket slot -arrow-.
- Align mounts stress-free by rocking ⇒ [Page 10-13](#) , tightening torques.
- Install pendulum support.



⇒ *Repair Manual, Suspension, Wheels, Brakes, Steering m.y. 1992-1996, Repair Group 40* ⇒ *Repair Manual, Suspension, Wheels, Steering from m.y. 1997, Repair Group 40*



Vehicles with A/C

- Install A/C compressor.

⇒ [Repair Manual, Heating & Air Conditioning m.y. 1992-1996, Repair Group 87](#)

⇒ [Repair Manual, Heating & Air Conditioning from m.y. 1997, Repair Group 87](#)

Vehicles with manual transmission

- Connect line/hose on slave cylinder and secure with clip.
- Install gearshift mechanism on transmission, adjust if necessary.

Vehicles with automatic transmission

- Install transmission shift cable on transmission, adjust if necessary.

⇒ [Repair Manual, 4 Spd. Automatic Transmission 01P, Repair Group 37](#)

All vehicles

- Install axle shafts.

⇒ *Repair Manual, Suspension, Wheels, Brakes, Steering m.y. 1992-1996, Repair Group 40*

⇒ *Repair Manual, Suspension, Wheels, Steering from m.y. 1997, Repair Group 40*

- Install power steering pump with bracket.

⇒ *Repair Manual, Suspension, Wheels, Brakes, Steering m.y. 1992-1996, Repair Group 40*



⇒ [*Repair Manual, Suspension, Wheels, Steering from m.y. 1997, Repair Group 40*](#)

- Install front exhaust pipe ⇒ [Page 26-3](#) , item 8.

- Install intake manifold complete with lower section and Throttle Valve Control Module (note position of dowel sleeves in cylinder head when installing) ⇒ [Page 15-9](#) .

- Install ribbed belt ⇒ [Page 13-22](#) .

- Install radiator and radiator fan ⇒ [Page 19-22](#) .

- Fill system with coolant ⇒ [Page 19-14](#) .

- Adjust accelerator cable ⇒ [Page 20-25](#) .

- Re-connect wiring and route as necessary.

⇒ *Electrical Wiring Diagrams, Troubleshooting & Component Locations*

- Check Diagnostic Trouble Code (DTC) memory.

⇒ [Repair Manual, 2.8 Liter VR6 2V Fuel Injection & Ignition, Engine Code\(s\): AES, Repair Group 01](#)

- Check idle speed and ignition timing.

⇒ [Repair Manual, 2.8 Liter VR6 2V Fuel Injection & Ignition, Engine Code\(s\): AES, Repair Group 24](#)

- Check headlight adjustment; adjust if necessary.

⇒ [Repair Manual, Maintenance](#)



Tightening torques, chart

Bolted connections		Tightening torque
Engine to transmission	M8	25 Nm (18 ft lb)
	M10	60 Nm (44 ft lb)
	M12	80 Nm (59 ft lb)
Flywheel cover plate	M7	10 Nm (7 ft lb)
Pendulum support to transmission		80 Nm (59 ft lb) + $\frac{1}{4}$ turn (90°) further
Pendulum support to sub-frame		200 Nm (148 ft lb)
Starter to engine and transmission		45 Nm

	(33 ft lb)
Front exhaust pipe to exh. manifold	40 Nm (30 ft lb)
Front exhaust pipe to catalyst	25 Nm (18 ft lb)

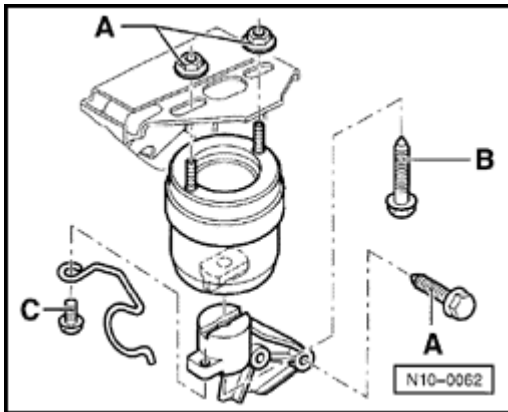


Bolted connections	Tightening torque
Transverse support to transmission and left mount	30 Nm (22 ft lb)
Axle shaft to wheel hub	150 Nm (111 ft lb) + $\frac{1}{4}$ turn (90°) further
Axle shafts to flanged shafts	80 Nm (59 ft lb)



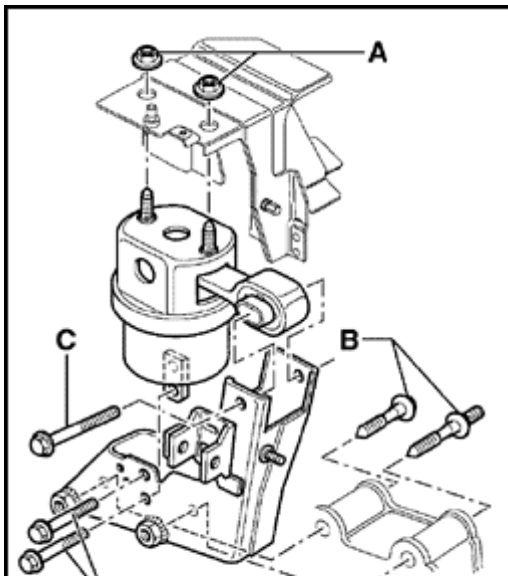
Assembly mounts, torque values

Tightening torques with bolts oiled



A Right side assembly mount

- ◆ A = 55 Nm (41 ft lb)
- ◆ B = 60 Nm (44 ft lb)
- ◆ C = 10 Nm (7 ft lb)



A Left side assembly mount

- ◆ A = 55 Nm (41 ft lb)
- ◆ B = 50 Nm (37 ft lb) + $\frac{1}{4}$ turn (90°) further
- ◆ C = 60 Nm (44 ft lb)
- ◆ D = 30 Nm (18 ft lb)



Vehicles with A/C, additional information and removal instructions

CAUTION!

Do not open A/C refrigerant circuit!

Note:

Only open A/C refrigerant circuit in workshops which have trained personnel, necessary tools, and equipment.

To remove and install engine without opening refrigerant circuit:

- Remove refrigerant line retaining clamp(s).
- Remove generator.

⇒ [Repair Manual, Electrical Equipment through July 1998, Repair Group 27](#)

⇒ [Repair Manual, Electrical Equipment from August 1998, Repair Group 27](#)

- Remove A/C compressor.

⇒ [Repair Manual, Heating & Air Conditioning m.y. 1992-1996, Repair Group 87](#)

⇒ *Repair Manual, Heating & Air Conditioning
from m.y. 1997, Repair Group 87*

- Secure A/C compressor to vehicle body to relieve any strain or stress to refrigerant lines and hoses.